

# Quintessence and phantom cosmology with nonminimal derivative coupling

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## Abstract

We investigate cosmological scenarios with a nonminimal derivative coupling between the scalar field and the curvature, examining both the quintessence and the phantom cases in zero and constant potentials. In general, we find that the universe transits from one de Sitter solution to another, determined by the coupling parameter. Furthermore, according to the parameter choices and without the need for matter, we can obtain a big bang, an expanding universe with no beginning, a cosmological turnaround, an eternally contracting universe, a big crunch, a big rip avoidance, and a cosmological bounce. This variety of behaviors reveals the capabilities of the present scenario. © 2010 The American Physical Society.

<http://dx.doi.org/10.1103/PhysRevD.81.083510>

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